PEACE/WILLISTON
FISH & WILDLIFE
COMPENSATION
PROGRAM

BC hydro

BRITISH COLUMBIA

A Reconnaissance Survey of Unnamed Lake (Bluff Hill Lake # 4)

K. Mathias
March 1997

PWFWCP Report No. 157

105-02092/

The Peace/Williston Fish & Wildlife Compensation Program is a cooperative venture of BC Hydro and the provincial fish and wildlife management agencies, supported by funding from BC Hydro. The Program was established to enhance and protect fish and wildlife resources affected by the construction of the W.A.C. Bennett and Peace Canyon dams on the Peace River, and the subsequent creation of the Williston and Dinosaur Reservoirs.

Peace/Williston Fish and Wildlife Compensation Program, 1011 Fourth Ave. 3rd Floor, Prince George B.C. V2L 3H9

Website: *www.bchydro.bc.ca/environment/initiatives/pwcp/*

This report has been approved by the Peace/Williston Fish and Wildlife Compensation Program Fish Technical Committee.

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A RECONNAISSANCE SURVEY OF

UNNAMED LAKE (BLUFF HILL LAKE # 4)

WATERSHED:	**Williston Reservoir (Finlay Reach)**
DATE OF SURVEY:	**August 23-24, 1996**
FIELD CREW LEADER:	**Karin Mathias**
FIELD ASSISTANT:	**Wayne Cook**
REPORT PREPARED BY:	**Karin Mathias**
REPORT EDITTED BY:	**Mark Hunter**

BRITISH COLUMBIA CONSERVATION FOUNDATION

PEACE / WILLISTON FISH AND WILDLIFE COMPENSATION PROGRAM

B. C. MINISTRY OF ENVIRONMENT, LANDS AND PARKS

FUNDED BY: FOREST RENEWAL BRITISH COLUMBIA

RELEASED BY: _____

D. J. Cadden, Regional Fisheries Biologist

LAKE: Unnamed (Bluff Hill Lake # 4) **SYSTEM NAME: Finlay River**

A.S.A.P. REFERENCE NO.: **WATERSHED CODE: 230-9980-131**

DATA ON FILE FOR THIS SURVEY

Location	X	Dissolved O_2 / Temp. Profiles	X
Physical Data	X	Winter Dissolved O_2 / Temp. Profiles	--
Bench Mark	X	Netting Record	X
Terrain Features	X	Lake Catch Summary	X
Access	X	Individual Fish Data	--
Resorts and Campsites	X	Fish Preserved	--
Other Developments	X	Stomach Analysis	--
Obstructions and Pollutions	X	Scale Reading	--
Special Restrictions	X	Location of Inventory Sites	X
Aquatic Plants	X	Photograph Directory	X
Wildlife Observations	X	Appendices	
Miscellaneous Comments	X	A: Water Chemistry Analysis	X
Lake Drainage	X	B: Tributary Stream Data	--
Fisheries Management Comments	X	C: Fish Scale Analysis	--
History of Previous Surveys	X	Bathymetric Map Reduction	X
Water Chemistry Summary	X	Bathymetric Map	--

LOCATION

Location:	approximately 74 km south-southeast of Fort Ware		
Elevation:	750 m ± 10 m	U.T.M.:	10.377537.6302082
Latitude / Longitude:	56°50'45" 122°00'28"	N.T.S. Map No.:	94 C/14 and 94 C/15 Edition 2
Management Unit:	7-40	Biogeoclimatic Zone:	Boreal Black and White Spruce
Ecoprovince:	Sub-Boreal Interior	Ecoregion:	Northern Canadian Rocky Mountains
Ecosection:	Cassiar Ranges		

Drainage: Unnamed C. --> Unnamed L. --> Unnamed C. --> Unnamed P. --> Williston Reservoir (Finlay Reach) --> Peace R.

PHYSICAL DATA

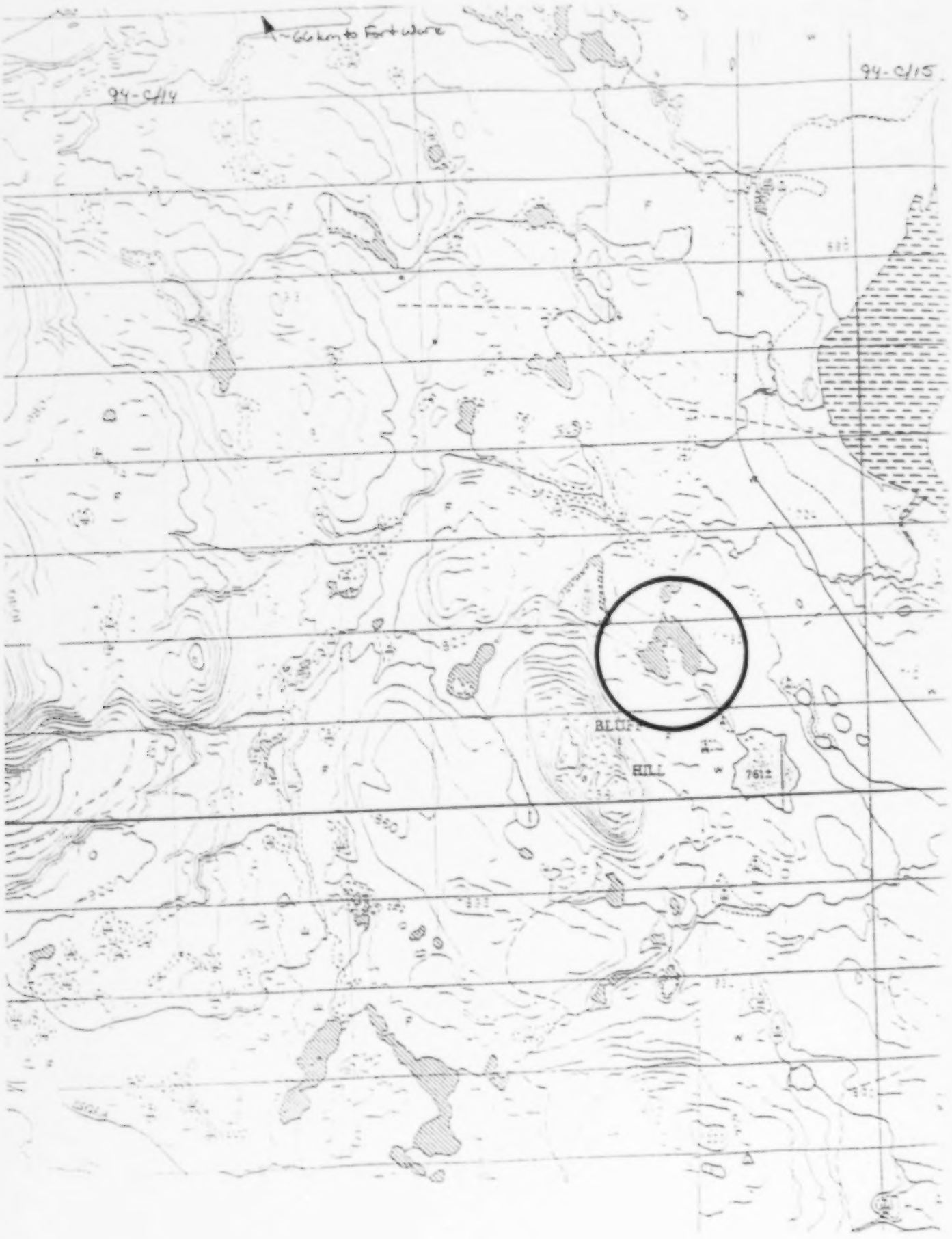
Lake Drainage Area:	5.2 km^2	Volume:	638 193 m^3
Water Surface Area:	287 626 m^2	Perimeter of Islands:	113 m
Area Above 6 m Contour:	280 457 m^2	Number of Islands:	1
Shoreline Perimeter:	3 650 m	Mean Depth:	2.2 m
Maximum Depth:	7.0 m	Secchi Reading:	2.0 m
Filterable Residue (TDS):	260 mg/L		

Sounding Device: Lowrance X-15 Elevation Source: Contour Interpolation

BENCHMARK

(Iron spike, center of red circle) located 2.0 m above present water level in a 19 cm diameter spruce tree that is 3.4 m from the present water's edge, and located approximately 75 m southeast of the tip of the main point projecting into Bluff Hill Lake # 4, west of beaver hut # 6 (Plate # 6).

High Water Mark: 0 m above water level at time of survey


~66 km to Fort Ware
94-C/14
94-C/15
BLUFF
HILL
7612

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

TERRAIN FEATURES

Immediate Shoreline:

The shoreline slope of Bluff Hill Lake # 4 is very low around the whole lake, except for the center portion of the northeast side of the lake, where the slope becomes moderately steep. In the north corner of the lake, there is an extensive area of treed marsh to either side of the outlet creek, consisting mainly of sedge grasses This marsh extends all the way down the northwest side of Bluff Hill Lake # 4. Another expansive treed sedge grass marsh is located at the southeast end of the southwest arm of the lake, out of which flows Inlet # 1. A smaller marsh area, fronted by a large patch of reeds, is located in the area of Inlet # 2, at the southeast end of the southeast arm of Bluff Hill Lake # 4. Most of the shoreline, including the island, is fronted by sedge grasses, backed by scrub birch. A spruce and lodgepole pine forest, with aspen trees commonly intermixed, grows behind. Around the perimeter of the lake, living shoreline trees are commonly submerged up to 20 cm at their bases. Bluff Hill Lake # 4 has six beaver huts located on it's shores, at least a few of which appear to be in active use.

The shoreline substrate consisted mainly of a thin layer of silts and organics with cobble found occasionally underneath, especially along the northeast side of the lake. Four extensive beds of aquatic vegetation, dominated by yellow waterlilies (Nuphar sp.), were growing in the southwest arm of Bluff Hill Lake # 4, including one growing in a shallow area to the southwest of the island. Patches of reeds were also commonly growing around the lake in 1.0-1.5 m of water. Along the northeast and southwest sides of the eastern bay, and along the southwest side of the western bay, the lake's bottom drops off steeply. Around the rest of the lake, the lake's bottom has a low to moderately low slope away from the lake's edge.

Surrounding Country:

Bluff Hill Lake # 4 is surrounded by a mature forest of lodgepole pine and spruce trees with aspen trees commonly intermixed. The forest is mainly either equal parts lodgepole pine and spruce, or is spruce dominated. The only exception is the moderately steep stretch of shore on the northeast side of the lake, which is lodgepole pine dominated. The point of land projecting into the lake to the south makes an ideal camping area because of its relative flatness and dryness. A high bluff, gazetted as Bluff Hill, is located approximately 1-2 km to the southwest of Bluff Hill Lake # 4. Attractive mountain peaks can be seen in the distance from the northwest to the northeast of the lake (Plate # 6). Low rolling hills surround the rest of Bluff Hill Lake # 4. The outlet of Bluff Hill Lake # 4 drains to a small unnamed pond situated 120 m directly north. Bluff Hill Lake # 4 is situated within the Boreal Black and White Spruce biogeoclimatic zone.

Bluff Hill Lake # 4 is one of five lakes that surround Bluff Hill. Bluff Hill Lake # 5 drains directly into Bluff Hill Lake # 4, which drain into the outlet of Bluff Hill Lake # 3. Bluff Hill Lakes # 1 and # 2 are found upstream of Bluff Hill Lake # 3.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

ACCESS

Directions:

From it's junction with Highway 39, proceed south on Highway 97 for approximately 1.5 km, and turn right on to the Finlay Forest Service Road. Proceed north for approximately 200 km to Mesilinka Camp, then continue on the Finlay-Chunamon Forest Service Road for another 144 km to Swannell Camp, approximately 17 km west of the Ingenika Arm barge landing. The total distance from the junction of Highway 97 and Highway 39 to Swannell Camp is approximately 335 km. From Swannell Camp, Bluff Hill Lake # 4 is approximately a 15 km helicopter ride to the northeast.

Alternatively, the Ingenika Arm can be crossed by barge. If this is done, then on the north side of the Ingenika Arm, continue on the Finlay Forest Service Road for approximately 10 km, and turn left onto the Finlay-Pelly Lake Forest Service Road (Pelly Mainline). From the immediate cut block, Bluff Hill Lake # 4 is approximately a 2.5 km helicopter ride to the south.

Barge transportation can be arranged with Finlay Navigation Inc. who can be reached in Prince George at (250) 964-3525 and in Mackenzie at (250) 997-3525. Actual barge pick-up times may vary greatly from the predicted pick-up time.

The Pelly mainline and cut block conditions were not investigated for this lake inventory and the distances given may not be accurate. Up to date Forest Plan Maps should be consulted before accessing Pelly Lake # 2 from the north side of the Ingenika Arm.

Road Type and Conditions:

Highway 97 is a well-maintained, two-lane provincial highway. The Finlay Forest Service Road, and the Finlay-Chunamon Forest Service Road from 0 km to 79 km, is a well-maintained, two-lane gravel road that can be easily traveled with a two-wheel drive vehicle during the summer. After approximately 79 km, near Factor Ross Creek, the road becomes quite narrow and very windy. The Finlay Forest Service Road north of the Ingenika Arm is a well-maintained, two-lane gravel road that can be easily traveled with a two-wheel drive vehicle during the summer. The Finlay-Pelly Lake FSR (Pelly Mainline) conditions are unknown as Bluff Hill Lake # 4 was accessed by helicopter from Swannell Camp.

Restrictions:

Although there are no restrictions, it is recommended that a truck radio be used when traveling the gravel roads.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

RESORTS AND CAMPSITES

There were no resorts or campsites on Bluff Hill Lake # 4 at the time of survey.

OTHER DEVELOPMENTS

None noted.

OBSTRUCTIONS AND POLLUTIONS

There are large beds of yellow waterlilies (Nuphar sp.) growing the southwest arm of Bluff Hill Lake # 4 that may be difficult for motor boats to pass through as they wind around the propeller.

SPECIAL RESTRICTIONS
None known.

AQUATIC PLANTS

The following aquatic plants were identified in Bluff Hill Lake # 4 during the time of survey:

yellow waterlilies (Nuphar sp.)
sedge grasses
variableleaf pondweed (Potamogeton gramineus)
floatingleaf pondweed (Potamogeton natans)
milfoil (Myriophyllum sp.)
Chara sp.

WILDLIFE OBSERVATIONS

The following wildlife or signs were seen during the time of the survey:

northern hawk owl
frogs
bear sign
beaver
red squirrel
2 barred owls
loons
merganser ducks
kingfisher
juvenile lake gull

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

MISCELLANEOUS COMMENTS

1) Bathymetric map: The lake outline was drawn from an enlargement of air photo 30 BCB 93053: No. 220, flown on August 10, 1993.

2) Many of the distances given in the directions to Bluff Hill Lake # 4 (in the Access section) have been taken from the Mackenzie South Forest District Recreation map and thus distances are approximations only.

3) The following aquatic organisms were observed in abundance in Bluff Hill Lake # 4:

- dragonfly adults and nymphs
- Gammerus sp.
- water boatmen (larvae and adults)
- copepods
- leeches

4) There is a good location for a Forest Recreation Site on the west side of the lake.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

LAKE DRAINAGE

General:

Bluff Hill Lake # 4 is fed by two inlets and one intermittent inlet. The lake is drained to the north by an unnamed creek that flows for 0.1 km to a small, unnamed lake. The unnamed outlet of this lake flows for 0.6 km where it joins another unnamed creek which then flows another 0.55 km to an unnamed pond. The unnamed outlet of the pond flows for 3.0 km to the Finlay Reach of the Williston Reservoir. All distances are approximations.

Major Systems:

There are no major systems.

Minor Systems:

Inlet # 1 - Unnamed Creek

Inlet # 1 enters Bluff Hill Lake # 4 through the marsh area at the southeast end of the southwest arm of the lake. The main channel mouth is undefined at the lake's edge on account of the "floating" nature of the sedge grass swamp (Plate # 7). The inlet channel braids many times through the sedge grass swamp, but the braids are never defined for more than 4 m, never wider than 0.5 m, and are typically 0.5 m deep. The main channel of Inlet # 1 has an average wetted width of 1.0 m and an average depth of 1.0 m. The channel substrate consists of silts and organics. Inlet # 1 goes underground into banks grown over with Equisetum sp. and ha um sp. moss approximately 45 m upstream of Bluff Hill Lake # 4, where the edge of the forest meets the marsh. Inlet # 1 had no fisheries potential during the survey period.

Inlet # 2 - Unnamed Creek

Inlet # 2 enters Bluff Hill Lake # 4 through a small sedge grass marsh area on the southwest side of the southeast arm. The mouth of the inlet is fronted by approximately 15 m of reeds (Plate # 8). The first 35 m of Inlet # 1, which runs through a sedge grass swamp, has an average wetted width of 2.5 m and an average depth of 0.75m, with another 0.5 m below that of thick silts and organics, and some vegetation. Approximately 35 m upstream of Bluff Hill Lake # 4, the channel, which narrows to 0.07 m wide and 0.02 m deep, flows over a grassy mud mound from a small (8 m by 6 m) pond with a substrate of mainly silts and organics and a small amount of large gravel and cobble. Upstream of the pond, Inlet # 1 breaks into three sub-channels, two of which end in mud and moss banks approximately 60 m upstream of the lake. The main channel (Plate # 9)

ends 55 m upstream of Bluff Hill Lake # 4 at a beaver dam. The beaver dam is 0.35 m high and 15 m long. Although no flow was observed over the dam at the time of survey, an intermittent channel was clearly visible over the dam. A pond, created upstream of the dam, is approximately 15 m by 20 m, and has an extensive population of Gammerus. Upstream of the pond, the channel braids heavily and flows from small pond to small pond, first through a treed swamp, and then through an open swamp at approximately 125 m upstream of the lake. Inlet # 2 had no fisheries potential during the survey period.

Intermittent Inlet # 1 - Unnamed Creek

Intermittent Inlet # 1 enters Bluff Hill Lake # 4 at the east bay of the southeast arm of the lake through a sedge grass swamp (Plate # 10). Approximately 6 m upstream from the lake, Intermittent Inlet # 1 ends at a mud rise covered with moss and Equisetum. A dry, seasonal channel, approximately 0.2 m wide, occurs upstream of this for another 20 m, until, at 26 m upstream of the lake, the seasonal channel is indeterminable. Intermittent Inlet # 1 had no fisheries potential during the survey period.

Outlet - Unnamed Creek

The outlet creek drains Bluff Hill Lake # 4 in the north corner of the lake through a "floating" sedge grass swamp (Plate # 11). The outlet runs for approximately 120 m in length where it then enters a small unnamed lake. The channel has an average wetted width of 1.75 m and an average depth of 1.25 m. The outlet channel substrate consists of a layer of silts and organics approximately 0.5 m thick, with milfoil (Myriophyllum sp.) and yellow waterlilies (Nuphar sp.) growing commonly over top. The outlet creek of Bluff Hill Lake # 4 had no fisheries potential during the survey period.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

FISHERIES MANAGEMENT COMMENTS

This lake is believed to be barren of all fish species. No fish were captured in one experimental gill net and four minnow traps set overnight. The two inlets and one intermittent inlet entering Bluff Hill Lake # 4 offer no spawning habitat. This is also the case for the outlet creek, at least until it entered the small, unnamed lake downstream. Bluff Hill Lake # 4 has an abundant aquatic invertebrate community as many Gammerus, water boatmen, dragonflies, leeches and copepods were observed at the time of survey. Although the maximum depth of Bluff Hill Lake # 4 is relatively shallow at 6.6 m, the temperature / oxygen profile recorded indicates that the dissolved oxygen levels at the time of survey were sufficient to support a fish population. The pH which averaged at 8.2 from the surface to the bottom, is also suitable for the survival of salmonid species. Bluff Hill Lake # 4 has a very high aesthetic value due to the superb mountain view, the wide extent of suitable camping areas in pristine, mature forest, the lake's unique shape (including the island), and the abundance of wildlife utilizing the lake at the time of survey. In spite of the lack of spawning habitat, this lake may provide an enjoyable fishery if stocked regularly with rainbow trout, such as a population of triploid all-female rainbow trout.

HISTORY OF PREVIOUS SURVEYS

Lake Surveys:

None known.

Other Related Studies:

None known.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

WATER CHEMISTRY SUMMARY **Limnology Station No. 1**

Field Conditions:

Date:	August 24, 1996		
Time:	1315 hrs	Air Temperature:	20.0 °C
Wind Velocity:	0-2 km/h	Wind Direction:	from the west
Cloud Cover:	0/10 o.c.	Surface Conditions:	light ripple
Secchi Disc:	2.0 m	Water Colour:	brownish and cloudy

Method Used:

Dissolved Oxygen:	YSI Model 58 Oxygen / Temperature Meter
Water Temperature:	YSI Model 58 Oxygen / Temperature Meter
Air Temperature:	Hand-Held Alcohol Thermometer
pH (field):	Digital pH Pocket Tester
H_2S (field):	Hach H_2S Field Test Kit
Laboratory Used:	Pacific Environmental Science Center
Water Sampler:	Vertical Alpha Water Bottle (Vandorn)
Metal Sampler:	By Hand; Preserved With 2.0 mL Nitric Acid
Substrate Sampler:	Substrate Sample Not Taken

Water Sample Chemistry: **SEAM Site No.: E223147**

	Sampling Depths	
	Surface (0.5 m)	Lower (5.5 m)
Alkalinity (lab)	208 mg/L	208 mg/L
Filterable Residue 105°C (lab)	260 mg/L	260 mg/L
H_2S (field)	N/A	0.0 mg/L
Nitrogen - Total (lab)	1.6 mg/L	1.6 mg/L
Non-Filterable Residue (lab)	< 5 mg/L	7 mg/L
pH (field)	8.4	7.9
pH (lab)	8.25	8.23
Phosphorus - Total Dissolved (lab)	0.006 mg/L	0.009 mg/L
Specific Conductance (lab)	369 uS/cm	368 uS/cm

Bottom Depth:	7.0 m
Substrate Sample Depth:	N/A

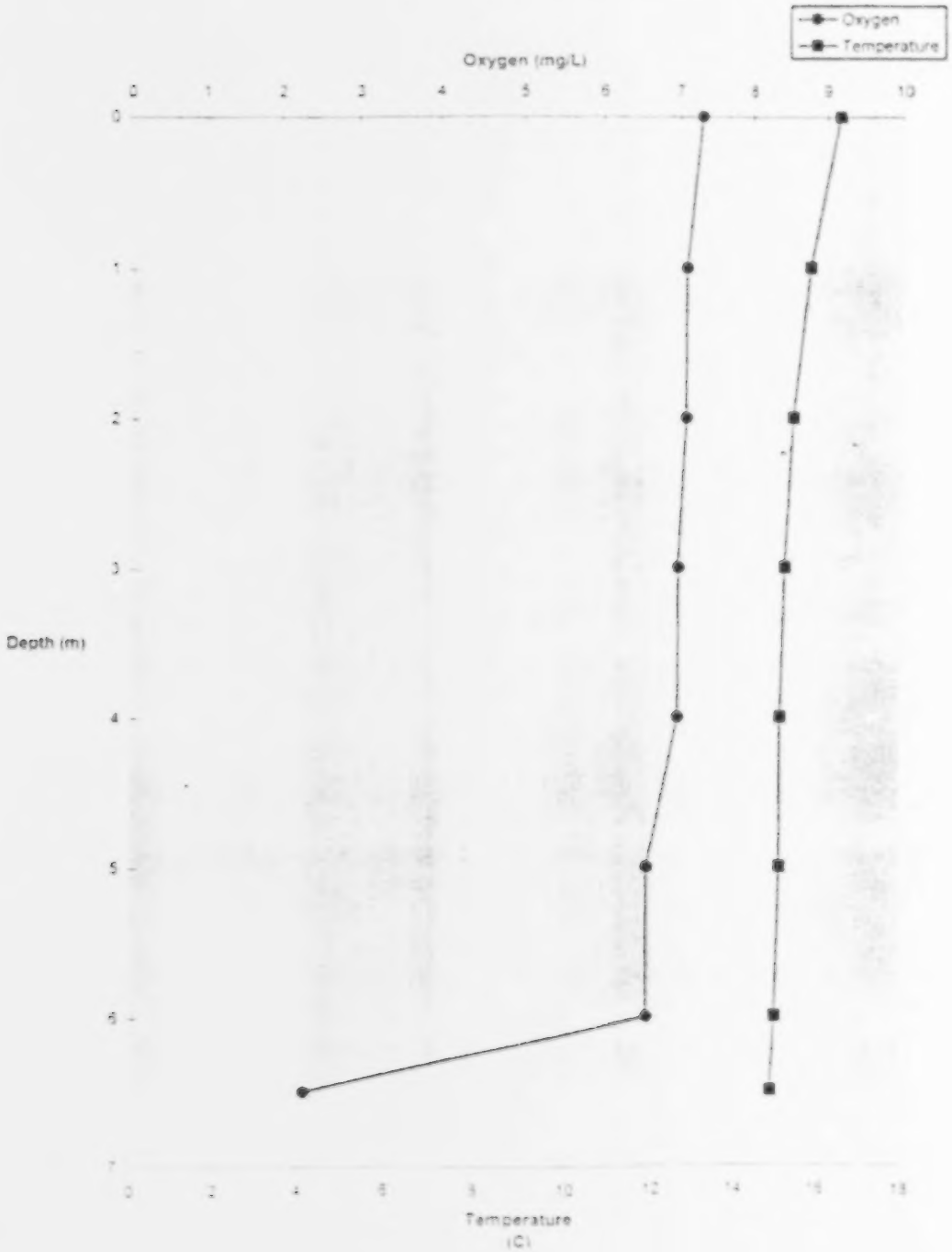
* additional analyzed parameters and results, including metals, are found in Appendix A

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

SUMMER OXYGEN / TEMPERATURE DATA

DEPTH (m)	O_2 (mg/L)	TEMPERATURE (°C)
Surface	7.3	16.5
1.0	7.1	15.8
2.0	7.1	15.4
3.0	7.0	15.2
4.0	7.0	15.1
5.0	6.6	15.1
6.0	6.6	15.0
6.5	2.3	14.9
7.0	Bottom	

SUMMER OXYGEN / TEMPERATURE PROFILE



LAKE: Unnamed Lake (Bluff Hill Lake # 4)

NETTING RECORD

Mesh Size Experimental Order: 25, 76, 51, 89, 38, 64 mm

NETTING SITE # 1

Type:	Sinking Monofilament Gill Net			
Date Set:	August 23, 1996		Time:	1820 hrs
Date Lifted:	August 24, 1996		Time:	937 hrs
Net Dimensions:	Length:	91.4 m	Depth:	2.4 m
Shallow End Mesh Size:	25 mm		Depth:	0.9 m
			Substrate:	silt over cobble
Deep End Mesh Size:	64 mm		Depth:	5.5 m
			Substrate:	silt / organics

Comments: The net started approximately 2.0 m out from the shore.

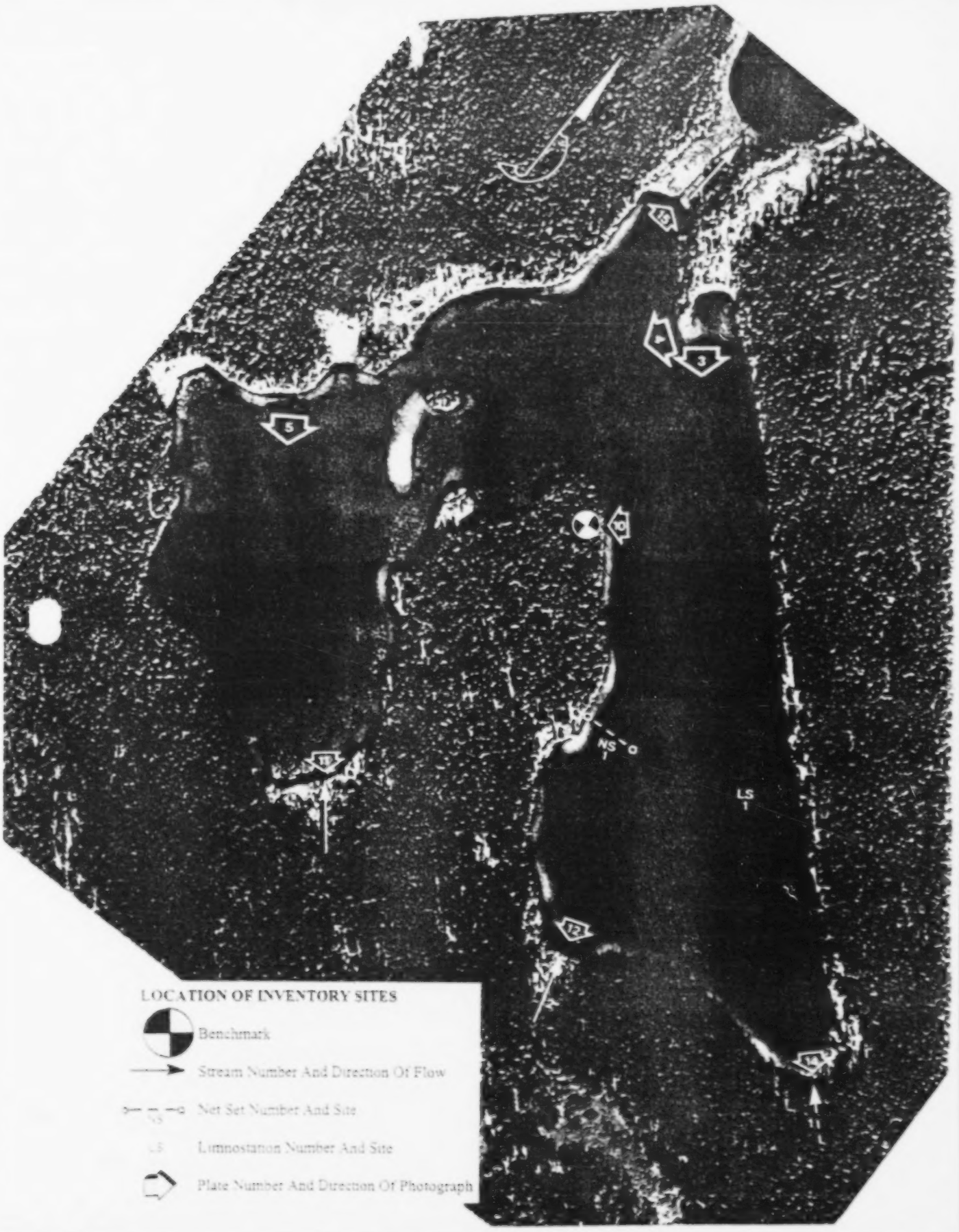
LAKE CATCH SUMMARY

Species	Netting Site No. 1	Angled	Other	Total	Number Sampled	Number Preserved	Size Range (cm)
None	0	0	0	0	0	0	N/A

MINNOW TRAPS:

Bait: Sardines

Trap No.	Hours	Depth (m)	Substrate	Species	No. Caught	Size Range (cm)
1	4:49	0.9	silt / organics with water lilies	leech	15	-
2	4:51	1.0	silt / organics with water lilies	leech water boatmen	3	-
3	4:52	0.9	silt / organics with water lilies and pondweed	leech	3	-
4	4:51	1.5	silt / organics with water lilies and rushes	empty	0	-


LOCATION OF INVENTORY SITES
Benchmark
Stream Number And Direction Of Flow
Net Set Number And Site
Limnostation Number And Site
Plate Number And Direction Of Photograph
NS 1
LS 1

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

PHOTOGRAPH DIRECTORY

Plate	Roll : Number	Description
1	20: 21	Aerial view of Unnamed Lake (Bluff Hill Lake # 4) looking north.
2	20: 22	Aerial view of Unnamed Lake (Bluff Hill Lake # 4) looking south
3	21:13-14	Panoramic view Unnamed Lake (Bluff Hill Lake # 4) looking southeast, taken from the north corner of the lake near the outlet.
4	21: 15-16	Panoramic view of Unnamed Lake (Bluff Hill Lake # 4) looking south, taken from the north corner of the lake near the outlet.
5	21: 23-24	Panoramic view of the southeast corner of the southwest arm of Unnamed Lake (Bluff Hill Lake # 4), taken from southwest of the island.
6	22: 7	View of the benchmark located 2.0 m above the present water level in a 19 cm diameter spruce tree that is 3.4 m from the present water's edge and located approximately 75 m southeast of the tip of the main point projecting into Unnamed Lake (Bluff Hill Lake # 4).
7	21: 5	View of the mouth of Inlet # 1 where it enters Unnamed Lake (Bluff Hill Lake # 4) in the southeast end of the southwest arm of the lake.
8	22: 3	View of the mouth of Inlet # 2 where it enters Unnamed Lake (Bluff Hill Lake # 4) in the southwest bay of the southeast arm of the lake.
9	22: 2	Upstream view of the main channel of Inlet # 2, taken approximately 45 m upstream of Unnamed Lake (Bluff Hill Lake # 4).
10	22: 4	View of the mouth of Intermittent Inlet # 1 where it enters Unnamed Lake (Bluff Hill Lake # 4) in the southeast bay of the southeast arm of the lake.
11	22: 1	View of the mouth of the outlet where it drains Unnamed Lake (Bluff Hill Lake # 4) from the north corner of the lake.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

Plate # 1: Aerial view of Unnamed Lake (Bluff Hill Lake # 4) looking north.

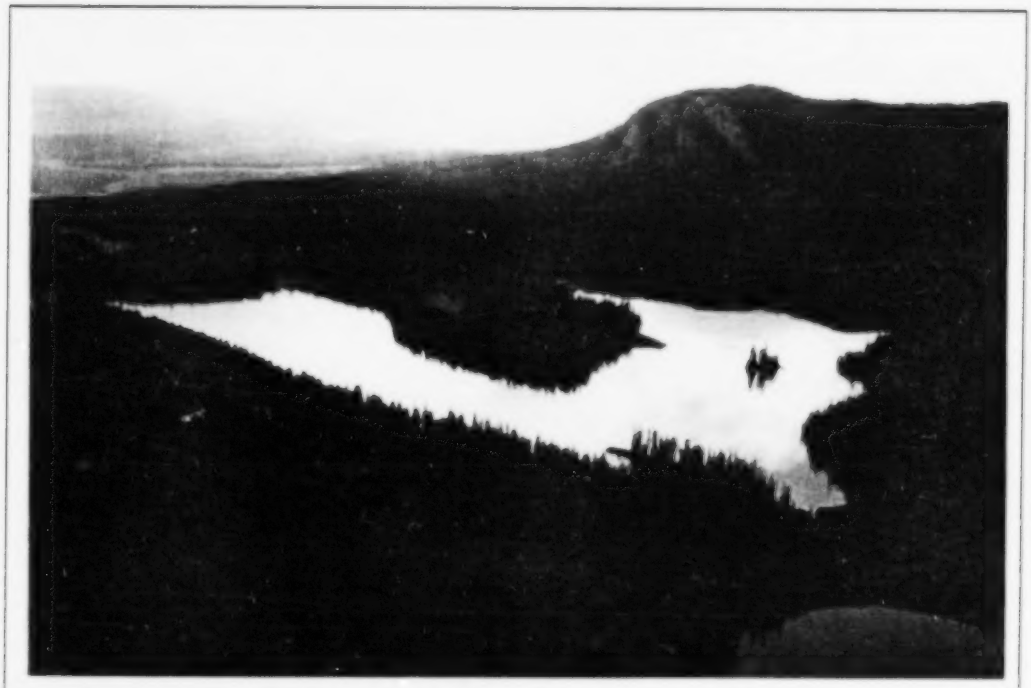


Plate # 2: Aerial view of Unnamed Lake (Bluff Hill Lake # 4) looking south.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

Plate # 3: Panoramic view of Unnamed Lake (Bluff Hill Lake # 4) looking southeast, taken from the north corner of the lake near the outlet.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

Plate # 4: Panoramic view of Unnamed Lake (Bluff Hill Lake # 4) looking south, taken from the north corner of the lake near the outlet.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

Plate # 5: Panoramic view of the southeast corner of the southwest arm of Unnamed Lake (Bluff Hill Lake # 4), taken from southwest of the island.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

Plate # 6: View of the benchmark located 2.0 in above present water level in a 19 cm diameter spruce tree that is 3.4 m from the present water's edge and located approximately 75 m southeast of the tip of the main point projecting into Unnamed Lake (Bluff Lake # 4), west of beaver hut # 6.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

Plate # 7: View of the mouth of Inlet # I where it enters Unnamed Lake (Bluff Lake # 4) in the southeast end of the southwest arm of the lake.

Plate # 8: View of the mouth of Inlet # 2 where it enters Unnamed Lake (Bluff Hill Lake # 4) in the southwest bay of the southeast arm of the lake.

Plate # 9: Upstream view of the main channel of Inlet # 2, taken approximately 45 m upstream of Unnamed Lake (Bluff Hill Lake # 4).

Plate # 10: View of the mouth of Intermittent Inlet # I where it enters Unnamed Lake (Bluff Hill Lake # 4) in the southeast bay of the southeast arm of the lake.

LAKE: Unnamed Lake (Bluff Hill Lake # 4)

Plate # 11: View of the mouth of the outlet where it drains Unnamed Lake (Bluff Hill Lake # 4) from the north corner of the lake.

Appendix A

LABORATORY REPORT

Water Chemistry Analysis

RESULTS FOR PELLY LK #3-UNNAMED LAKE SAMPLES

Parameter Analyzed		Units	964409-001	964409-002
A ALINITY		mg/l	208	208
CONDUCTIVITY		uS/cm	369	368
METALS/TOTAL (WATER-ICP)	AG	mg/l	<.01	-
	AL	mg/l	<.06	-
	AS	mg/l	<.06	-
	B	mg/l	<.01	-
	BA	mg/l	.027	-
	BE	mg/l	<.001	-
	CA	mg/l	33.4	-
	CD	mg/l	<.006	-
	CO	mg/l	<.006	-
	CR	mg/l	<.006	-
	CU	mg/l	<.006	-
	FE	mg/l	.067	-
	K	mg/l	3.3	-
	MG	mg/l	29.5	-
	MN	mg/l	.031	-
	MO	mg/l	<.01	-
	NA	mg/l	4.2	-
	NI	mg/l	<.02	-
	P	mg/l	<.1	-
	PB	mg/l	<.06	-
	SB	mg/l	<.06	-
	SE	mg/l	<.06	-
	SI	mg/l	1.95	-
	SN	mg/l	<.06	-
	SR	mg/l	.226	-
	TI	mg/l	<.002	-
	V	mg/l	<.01	-
	ZN	mg/l	.008	-
NITROGEN/AMMONIA		mg/l	.131	.132
/NITRITE		mg/l	.003	.004
/NITRITE+NITRATE		mg/l	.004	.004
/TOTAL		mg/l	1.6	1.6
PH		Rel.U.	8.25	8.23
PHOSPHORUS/O-PO4		mg/l	<.001	<.001
/TOTAL		mg/l	.021	0.023
/TOTAL DISSOLVED		mg/l	.006	0.009
RESIDUE/FILTERABLE		mg/l	260	260
/NON-FILTERABLE		mg/l	<5	7
BC CLIENT STUDY CODE			20	20
SAMPLING AGENCY			91	91
SITE IDENTIFIER/NUMBER			E223147	E223147
COLLECTION START DATE		y/m/d	96/08/24	96/08/24
UPPER DEPTH		metres	0.5	5.5
TEMPERATURE ON ARRIVAL		deg.C	4	4

Appendix B

BATHYMETRIC MAP

Reduced to
34%
of Original Size

STATISTICS AT TIME OF SURVEY

Unnamed Lake
(Bluff Hill Lake # 4)